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WHITE-FRINGED BEETLES

A, *a*, Strawberry plant injured by white-fringed beetles; *b*, adult beetle. *B*, Larval injury to alfalfa root system; *a*, female ovipositing under ground litter; *b*, egg mass; *c*, pupa; *d*, full-grown larva; *e* and *f*, immature larvae. *A* and *B*, natural size. *C*, Adult beetle, 4 times natural size.

(See other side for life history and control)

Picture Sheet No. 24

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Bureau of Entomology and Plant Quarantine, Agricultural Research Administration, United States Department of Agriculture

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WHITE-FRINGED BEETLES

(*Graphognathus* spp.)

Life History and Distribution

White-fringed beetle grubs live in the soil and feed on the roots of many kinds of plants, including beans, cotton, corn, peanuts, potatoes, various weeds, and ornamentals. They feed most heavily in the spring when nearly full grown and have ruined many acres of crops.

These insects pass the winter as grubs, or larvae. In the spring or early summer most of the grubs change to adults in little cells which they form in the soil. The grubs are white, legless, and about ½ inch long when full grown. The adult beetles are about 7/16 inch long. The adults normally emerge from the soil during the summer, and all of them are wingless females. They lay their eggs in small masses, usually attached to plant stems, sticks, or pebbles at or just below the soil surface. A single beetle may live 2 or 3 months and lay 600 to 700 eggs. The eggs hatch in about 2 weeks in warm, moist weather, and the grubs immediately enter the soil, where they remain until full grown. There is usually one generation a year.

There are three species and several races of white-fringed beetles, all of which are similar in appearance and habits. The beetle illustrated is *Graphognathus leucoloma striatus* (Buch.).

In 1948, 248,000 acres of land were known to be infested with the beetles. They are found in Alabama, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, and Tennessee.

Control

The Department of Agriculture is cooperating with State agencies in the control of these beetles and in the maintenance of quarantines to prevent their spread. The following measures are used in control:

Control of larvae by soil treatment.—Apply 10 pounds of DDT per acre uniformly to the soil surface as a dust (example, 200 pounds of a 5-percent DDT dust) by hand or with a mechanical distributor, or apply as a spray. Disk or cultivate immediately into the top 3 inches of soil.

Control of adults by foliage applications.—Spray yards, vacant lots, idle fields, shrubs, flowers, or other plants not used as food for man or animals with ½ to 1 pound of DDT per acre in a water suspension or an emulsion. Apply the spray every 10 to 15 days throughout the beetle season. For a suspension spray use 2 pounds of a wettable powder containing 50 percent of DDT in 100 gallons of water, or, for small quantities, ⅓ ounce of this powder in 1 gallon of water. DDT emulsions have greater residual value than suspensions. Ready-prepared emulsions are obtainable and should be used according to directions on the container.

In gardens, pastures, or on crops to be used as food, apply 8 to 10 pounds of cryolite in 100 gallons of water per acre at intervals of 7 to 10 days throughout the season.

Control by cultural practices.—Legume crops are favored by white-fringed beetles. Keep infestations low by the following practices:

1. Plant oats or other small grains in heavily infested fields.
2. Do not plant more than one-fourth of the cropland in annual legumes each year, and do not plant the same land to these crops more than once in 3 or 4 years.
3. Do not intercrop corn with peanuts, soybeans, crotalaria, or velvetbeans, and, insofar as possible, practice clean cultivation.
4. Fertilize corn or cotton heavily with commercial fertilizer or by turning under a winter cover crop.

CAUTION.—Insecticides are poisonous and should be handled with care. Store in a dry place where children and animals will not have access to them.

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